Current Work:

This week I continued work on the LCD as well as looked at the speech module. In terms of the LCD, it is connected to the microchip and ready to run my code. Before I do this, I need to debug my initialization code with does not seem to be working. Our LCD has power, but for some reason is not initializing correctly. The initialization code I have is complete according to Crystalfontz tech support, so I am thinking it has to do with a bad connection or problems with the configuration bits for the PIC16F874. After initialization, I should be able to send characters directly to the LCD screen. Using the following code I will be able to send a string of characters to the LCD screen.

```c
void LCDwritestring (const char* s)
{
    while(*s)
        LCDwritechar(*s++);
}
```

I also began the programming of the SP03 speech module. In researching how to send the device data, I found that it only involves a few simple commands, which are shown in the following table:

**Table 1: SP03 Commands**

<table>
<thead>
<tr>
<th>Command byte Transmitted to SP03 Module</th>
<th>Acknowledge byte returned from SP03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command 0x80</td>
<td>0x01</td>
</tr>
<tr>
<td>Full Volume 0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>Speech Pitch 0x04</td>
<td>0x04</td>
</tr>
<tr>
<td>Speech Speed 0x02</td>
<td>0x02</td>
</tr>
<tr>
<td>Text 'H'</td>
<td>H'</td>
</tr>
<tr>
<td>Text 'e'</td>
<td>e'</td>
</tr>
<tr>
<td>Text 'l'</td>
<td>l'</td>
</tr>
<tr>
<td>Text 'o'</td>
<td>o'</td>
</tr>
<tr>
<td>NULL 0x00</td>
<td>0x00</td>
</tr>
</tbody>
</table>

SP03 will now speak the text 0x00 indicates text loading is complete

In order to make it speak our own predefined phrases, a simple C routine needs to be implemented. To do this we will use the following line of code, which works similarly to the LCD code.
void speech(char c)
{
    int cnum;
    cnum = c;
    printf("%c", cnum);
    DelayMs(1);
}

void WriteSpeech(const char* s)
{
    while(*s)
    speech(*s++);

    This code breaks each line of text into individual characters using pointers, which would allow single characters to be sent to the module one at a time. For example, the program would send the phrase “Your temperature is 98.6 degrees F” one letter at a time. Combing this with the LCD output would allow the Speech module to speak the text as it is sent out to the LCD screen.

Project Review:

This week I spent a lot of time in the lab trying to debug the LCD problem we are having. I still do not know why the LCD won’t initialize, so I am going to rewire my proto board to make sure it has nothing to do with faulty wires or connections. As far as the probes are concerned, Jenna has made some significant progress and I anticipate that she will be complete with all 6 in the near future. Once we get the LCD going, I will be able to test my code for the processing and display of each signal that I wrote. The only thing left to do is figure out how we will implement the Bluetooth module into our device. This is a good thing to look into before next week. Also Mike has made some good progress in researching powering our device.

Future Work

As I have previously stated, The LCD and Bluetooth are the most important aspects of the design to look into this week. Once we receive the actual Bluetooth module, we will be able to consult the manual to see exactly how it will connect and function in our design.

Hours Worked: 18